PAINTS AND PIGMENTS.

Analysis of Mixed Paints, Colour Pigments, and Varnishes. By Dr. C. D. Holley and Prof. E. F. Ladd. Pp. xii+235. (New York: J. Wiley and Sons; London: Chapman and Hall, Ltd., 1908.) Price 10*s.* 6*d.* net.

Modern Pigments and their Vehicles. By Frederick Maire. Pp. xi+266. (New York: J. Wiley and Sons; London: Chapman and Hall, Ltd., 1908.) Price 8*s.* 6*d.* net.

THE book written by Dr. Holley, with the assistance of Prof. Ladd, on the analysis of mixed paints, colour pigments, and varnishes, should prove of considerable practical value, especially in America, and should be of assistance to analysts who have work of this kind to do, as it brings together much information which is otherwise scattered, and contains a good deal which is not to be found in the well-known manual by the late Mr. Hurst. Owing to the very large development of the ready-mixed paint trade in the United States, and the recent legislation there dealing with adulteration, the analysis of ready-mixed paints is of far more frequent occurrence than it is in this country, where it is very rare for a public body or an architect to have a proper examination made of the pigments and varnishes that they use.

The part of the book which deals with the determination of the covering power and tinting power of a pigment might certainly have been more developed. For a great many practical purposes this is a most important question. If, for instance, we take an ochre which is going to be used either to cover a surface by itself or to be mixed with white, the analysis of the ochre gives us little information of any practical value compared with its careful examination for covering power and tinting strength, yet comparatively little is said in the text-books about this method of assaying pigments. The most useful practical instrument for this purpose up to date has been the Lovibond tintometer, which enables the whole matter to be reduced to the plotting of comparative curves of tinting power, and also enables the actual covering power of a white lead to be exactly and accurately measured. The Lovibond tintometer is, however, an instrument which requires a great deal of practice before accurate results can be obtained, and recently Mr. Ives has introduced a new tintometer which may possibly replace the Lovibond tintometer for such purposes. The experiments that were made in this direction by Captain Abney resulted in the development of a most ingenious application of the spectrum, but in practice the Lovibond tintometer has so far proved the more useful instrument.

There is another direction in which the information in the book is somewhat imperfect, and that is the practical testing of varnishes, although the authors can hardly be blamed for this, as so little has yet been done to make the testing of varnishes thoroughly complete and efficient. The practical difficulties are great, and weather tests in the hands of different observers have proved to be very delusive. One of the most important questions on which there is need for far more accurate information is the durability of paints, prepared from different pigments and with different vehicles, when used for the protection of iron and steel structures. This is rapidly becoming a very serious question, as the use of steel in construction is greatly on the increase, and it is not yet possible to give very accurate information upon this matter. While, therefore, this book by Mr. Holley and Prof. Ladd may be regarded as bringing up to date the information both on the analysis of pigments and vehicles, and on the practical testing of their properties, to which the attention of chemists might well be directed, it reveals very clearly that in this department of applied chemistry a great deal more information is required to enable us to determine the facts upon which the suitability and durability of various vehicles depend.

The little book by Mr. Maire does not pretend to be a scientific treatise, but merely brings together much helpful information about modern vehicles and pigments, which is stated in a simple manner, without going into chemical details, and it should therefore prove of use to architects and house-painters and decorators who wish to have some general information as to the materials they use from day to day, and who are yet unable to understand a thoroughly scientific treatise. A fair number of the pigments which are mentioned by Mr. Maire belong rather to the artist's palette than to painters and decorators, but there is no reason why these should not be included and some reference made to them. The main difficulty of the modern decorator is, however, due to the introduction of a large number of pigments which are prepared from coal-tar dyes, fresh ones constantly coming into the market, which may be fugitive or have the property of bleeding, and about which he necessarily has no information. These pigments are introduced with fancy names, each colour maker choosing such names as may suit himself, and consequently a great deal of trouble has resulted in the painting and decorating trade. It is hardly possible for any text-book to deal efficiently with this subject, beyond giving certain general warnings that before using any new pigments, outside those already recognised, careful tests should be made by the architect and decorator.

Both these books can be regarded as thoroughly useful, the one for the analyst and the other for the architect and decorator, and should do something to encourage a more scientific study of these questions in this country.

A. P. LAURIE.

OUR BOOK SHELF.

A Dictionary of Spanish and Spanish-American Mining, Metallurgical, and Allied Terms, to which some Portuguese and Portuguese - American (Brazilian) Terms are Added. By E. Halse. Pp. xiii+380. (London: C. Griffin and Co., Ltd., 1908.) Price 10*s.* 6*d.* net.

IN view of the magnitude of the mining industries of Spain, Mexico, Central America, Peru, Chile, Bolivia, and other South American countries, there can be no doubt that there is a large and increasing

number of English and American mining engineers who will appreciate a good dictionary of mining terms, and certainly the author has spared no pains to make his dictionary as complete as possible. He has diligently studied the Spanish literature of mining and metallurgy, and his long residence in Mexico and in the United States of Colombia has enabled him to include a very full list of the terms used in these republics. Some Portuguese and Brazilian terms are also added.

It is curious to note that many terms have different meanings in different districts of South America. Thus, the well-known term *Caliche*, applied in Chile and Peru to the impure native nitrate of soda which is mined on a vast scale, denotes in the Uco district of Peru a thin layer of clayey soil capping auriferous veins, in Mexico felspar, and in Antioquia, Colombia, a recently-discovered mineral vein. It is probable that with the development of railway intercommunication many of these terminological differences will disappear, and that the most convenient terms will survive. In all cases the locality where a particular term is in use is noted by the author, and the authority is duly recorded. Small sketches, seventy-six in number, are added when necessary to elucidate a definition. The whole work has been compiled with scrupulous accuracy, and deserves unstinted praise. It is perhaps to be regretted that an English index to the Spanish terms has not been included in the scheme of the work.

Immanuel Kants Metaphysik der Sitten. Herausgegeben von Karl Vorländer. Price 4.60 marks.

Kirchners Wörterbuch der philosophischen Grundbegriffe. Neubearbeitung von Dr. Carl Michaëlis. Price 8 marks.

B. de Spinoza's kurzgefasste Abhandlung von Gott, dem Menschen und dessen Gluck. Übersetzt von C. Schaarschmidt.

G. W. F. Hegel's Phänomenologie des Geistes. Jubiläumsausgabe. Herausgegeben von Georg Lasson. Price 5 marks. (Leipzig: Durr'schen Buchhandlung, 1907.)

THE first three of these volumes are new editions of works that have been reprinted at various times in the "Philosophische Bibliothek," a series which does for the German student of philosophy what Ostwald's well-known "Klassiker der exakten Wissenschaften" do for the German student of the sciences. Hegel's famous treatise has been added to the series in celebration of the centenary of its original publication in 1807.

The books are admirably printed, and are provided with excellent introductions, often by men of first-rate authority. Many of them are, in addition, briefly but helpfully annotated, while most are equipped with a useful index. More conspicuously moderate in price even than Ostwald's reprints, these wonderful volumes, by their very existence, render almost unthinkable any English series comparable with them in scope and importance.

The Spectroscope: its Uses in General Analytical Chemistry. By T. Thorne Baker. Pp. viii+130. (London: Baillière, Tindall and Cox, 1907.)

THIS volume contains a fair amount of information useful to those wishing to purchase and set up spectroscopic apparatus for chemical research, but it seems to us to be ill-assorted and indifferently arranged. The author plunges straightway into the elementary mathematics of the prism and plane and concave gratings, and then describes the various parts of spectroscopes; yet on p. 78 it is thought necessary to inform the reader that a 12-inch focus telescope lens will give a much shorter spectrum than an 18-inch focus lens. There are, however, in the various discourses on adjustments, refractive indices, resolving power, the methods of producing radiation, sensitive plates, &c., numerous hints which will be found useful by those who have only a general knowledge of physics and wish to take up spectroscopy. It is for such readers that the book is intended. The notes on "series" and the Zeeman effect would probably be better left to the more advanced works on spectroscopy. There are a few uncorrected misspellings and one or two curious terms, which suggest that the author's acquaintance with real, practical laboratory work has been either too brief or too restricted. The astrophysical side of the subject is not dealt with at all, the idea being to restrict the book entirely to the chemical side. W. E. R.

Der Bedeutung der Reinkultur. Eine Literaturstudie. By Dr. Oswald Richter. Pp. viii+128. (Berlin: Gebrüder Borntraeger, 1907.) Price 4.40 marks.

THIS essay, with true German thoroughness, gives a very complete, though necessarily brief, survey of the various microscopic organisms that have been obtained in pure cultivation. The organisms are dealt with in groups (and not individually), partly according to their biological position, partly according to the changes they produce. The green and blue algæ and diatoms are first considered, then the bacteria—the nitrifying forms, cellulose fermenters, sulphur bacteria, &c.—and lastly the yeasts and protozoa. In the final portion of the book the subjects of pleomorphism and systematic position of these organisms are discussed. The bibliography is a very full one, and it is probable that this part of the compilation will be most appreciated. R. T. H.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

The Coloration of Birds' Eggs.

IN NATURE of May 14 Mr. R. L. Leslie asks if it is known how and why birds' eggs become coloured, and whether they illustrate Mendelian phenomena.

Something is known as to the nature of the pigments from which the colours are derived. The late Dr. H. C. Sorby in 1875 investigated their origin by means of the spectrum analysis. He discovered seven substances in the pigments accounting for every form of coloration. These substances are oorhodeine (red), oocyan, banded ooycan (blue), yellow ooxanthine, rufous ooxanthine (yellow and reddish-yellow), a sixth substance of a brown tint, and lichenoxanthine, found in many plants, lichens, and fungi, and perhaps due to microscopic fungi. According to older theories, the pigments were secretions from the blood and bile, and in the case of the first three Sorby was disposed to agree (*cf.* the origin of pigments in coloration of molluscan shell). The ground-colour is laid on the shell just before the extrusion of the egg, and in eggs not of a purely uniform colour the markings are then superposed, being originally rounded, but by movement of the bird they become blurred and blotched. The intensity of coloration varies with age up to a certain point. Eggs of young birds are often unspotted. No doubt absence of markings is due to deficiency of pigmentation. The last egg or eggs of a second brood, in fact, often lack normal coloration or markings. Age and health thus control coloration, which is brilliant in a healthy but indistinct in an unhealthy bird's egg. Whether albino birds lay eggs differing from those of birds typical in every way has not been noticed apparently.

Little is known definitely as to why eggs are coloured.